Standard for Manufactured Treatment Devices

Definition

An online storm sewer water quality structure utilizing filtration chambers, filtration or adsorption materials, vortex flow characteristics, vegetative components, or other appropriate technology to remove pollutants from storm water runoff.

Purpose

To capture sediment, nutrients, metals and hydrocarbons suspended in runoff from impervious surfaces before being conveyed to a storm sewer network or to another water quality treatment system.

Conditions Where Practice Applies

Located near the pollution source, the manufactured treatment device is adequate for small drainage areas that contain a predominance of impervious cover likely to contribute high hydrocarbon and sediment loadings such as small parking lots and gas stations. For larger sites, numerous storm devices are necessary for partial removal of sediment and hydrocarbons before routing to detention, retention or other water quality/quantity control facilities.

Design Criteria

The manufactured treatment device shall be determined on a case-by-case basis for adequacy in meeting or contributing to meeting New Jersey runoff criteria. Often, the devices should be included as part of a 'treatment train' of practices and should not be utilized as the sole method of water quality control.

The current NJDEP water quality storm event (1.25" in 2 hours) shall be used for design and will include only impervious portions of the contributing drainage area. A trash rack shall be installed at baffles or orifice to screen floatables. Manholes shall be included for each chamber to provide access for cleaning.

Design of the device shall provide for passage of the storm sewer design storm assuming the internal separator components (baffles, chambers, pipes, etc) are clogged.

The structure shall be capable of removing total suspended sediment load (TSS),

hydrocarbons, bacteria and phosphorous. If a higher efficiency is desired or if approaching the maximum contributing drainage area, then a larger size device (based on manufacturer specifications) may be required. The manufactured treatment catchbasin must be capable of trapping silt and clay size particles.

The structure shall be installed underground as part of the storm sewer system and be structurally designed for HS-20 traffic loading at the surface. The joints shall be water tight. The manhole cover for the treatment device shall clearly indicate that it is a pollutant trapping device.

The structure shall be equipped with a high flow bypass that regulates the flow rate into the treatment chamber and conveys high flows directly to the outlet such that scour and/or resuspension of material previously collected does not occur. The designer must check the capacity of the storm sewer system to ensure adequacy of the bypass system. The structure shall be able to be used as a bend structure in the storm sewer system.

The structure shall be capable of containing spills of floatable substances such as oil and gasoline and not be compromised by temporary backwater conditions (i.e., trapped pollutants should not be resuspended and scoured from the device during backwater conditions). The capabilities of the selected manufactured treatment device must be documented with scientific studies and reports.

Operations and Maintenance

Manufactured treatment devices require regular cleaning. Each installation shall have an inspection and maintenance plan which shall be submitted to the county or municipality before it goes into service. Facilities should be inspected at least monthly and after any significant rainfall. In areas of high sediment loading, they shall be cleaned after every major storm event, but no less frequently than three times a year.

Access must be provided for maintenance and monitoring activities, including clearance from adjacent structures to allow for equipment maneuvering. The structure shall be installed a minimum of 20 feet from any other structure, property line or septic tank/drainage field and a minimum of 50 feet from any steep slope. Vacuum pumping and manual removal of sediment deposits are required. Disposal or re-use of the sediment is subject to the guidelines, rules or regulations of other local, state and federal agencies.